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Updating the Shoreline Erosion & Protective Structures Policies of the LCP

Coastal Act Sections 30211, 30221, 30251, and 30253 all place high priority on preserving the ocean and recreational value of beaches.

Shoreline protective structures often have negative impacts on the coastal environment. As explained in the Coastal Hazards Section, hazard-avoidance, rather than engineered protection, should be your primary goal. The individual and cumulative adverse effects of constructing shoreline protective devices on bluff faces, sandy and rocky beach areas, and on sensitive coastal resources have been well-studied. Some impacts include:

- Direct loss of sandy and rocky intertidal areas that often have been found to be a critical component or the marine ecosystem,
- Interruption of the natural shoreline processes, that may contribute to erosion of the shoreline in many areas,
- Impeding public access to and along the coastline as a result of the structure's physical occupation of the beach, and
- Erosion impacts.

Policy §30235 states "Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible."

When working on your LCP, you can plan for new development in a way that reduces the need for shoreline protection, minimizes adverse impacts of allowed protection, and facilitates alternative forms of shoreline protection that do not involve armoring. Remember that most shoreline protective devices and beach nourishment projects meet the Coastal Act's definition of development found in §30106 of the Coastal Act (http://www.coastal.ca.gov/coastact.pdf). The Coastal Act places a high priority on preserving the ocean and recreation value of beaches (see box for examples of sections). Section 30235, quoted in the side bar, describes the conditions under which structures may be allowed.

➢ *What should an updated LCP section about shoreline protective devices and beach nourishment include?*

♦ Policies

Most LCP policies dealing with shoreline protective devices incorporate the relevant Coastal Act policies. In addition to Chapter 3 policies, your LCP policies should illustrate how the Coastal Act will be carried out, taking into consideration the unique features and needs of your area, including beach nourishment. Your LCP might further address shoreline hazards, protective devices, beach erosion, and responses to beach erosion besides armoring.

♦ Maps and Inventories

- An updated map or inventory and descriptions of existing shoreline protective devices, including revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls and other such constructions and their permit history. Include a review of public access to the beach.

♦ Definitions

Your LCP should include clear definitions. In relation to shoreline protective structures, these could include:

- Development and Existing Development
- Structure
- Principal structure
- Armoring
- Cumulative effects
- Littoral cell

You could define Principal structure as any primary living quarters, main commercial buildings and functionally necessary appurtenances to those structures such as septic systems and infrastructure.

➢ *What current ideas and tools might be included in an updated shoreline protection component?*

For new development, consider language:

- Ensuring that new development will not ever need a shoreline protective device and requiring conditions to ensure no future seawall,
- Requiring that accessory structures be constructed so as to be relocated should they become threatened by erosion,
- Identifying alternative protection for septic systems, including relocation,
- Stating the value of beaches and explaining how to improve them through sediment management.

For existing development, consider:

- Requiring an analysis of alternatives capable of protecting the existing structure from erosion,
- Requiring detailed information, such as the:
  - Amount of beach that will be covered by the shoreline protective device,
  - Amount of beach that will be lost over time through passive erosion,
  - Total lineal feet of shoreline protective devices within the littoral cell where the device is proposed, and
  - Cumulative impact of added shoreline protective devices for the structure's littoral cell.

Chapter 5 of the Beach Erosion and Response (BEAR) Guidance Document, created in 1999, provides information for planners working on the shoreline protection policies of their LCP (http://www.coastal.ca.gov/la/docs/bear_ch5.pdf). For a full copy of BEAR, call the Technical Services Unit at 415.904.5240.

- Describing tools, such as waivers, that would encourage the relocation of threatened structures, rather than constructing shoreline protective devices,
- Annually notifying all blufftop property owners that the placement of emergency shoreline protective devices shall be allowed only when the need for such protection was in fact caused by a sudden, unexpected occurrence demanding immediate action to prevent or mitigate loss or damage to life, health, property, or essential public services,
- Developing a program to allow for the mitigation of seawall impacts through payment of an annual or regular fee that is used to replenish beaches in the same littoral cell as the seawall,
- Ranking the types of permissible shoreline protective devices in order of least to most potential coastal impact and set forth technical criteria and standards for the structural design of shoreline protective devices that have the least potential for coastal impact,
- Prohibiting new shoreline protective structures from extending onto a beach farther than a straight line connecting the nearest corners of adjacent shoreline protective structures, if any,
- Requiring new shoreline protective devices to cover the least amount of beach area as is necessary to provide adequate protection for the existing principal structure,
- Sending notices of shoreline protective device permit applications to all local governments within the same littoral cell,
- Prohibiting additional permanent structures on bluff faces, except for engineered public beach access where no feasible alternative means of public access exists,
- Requiring all existing, non-permitted shoreline protective structures constructed after January 1, 1973 to obtain a coastal development permit, and
- If an in-lieu fee mitigation program exists or is created, requiring payment of an in-lieu fee to support beach nourishment efforts in a manner proportionate to the quantifiable effects of the shoreline protective device on the amount of sand that would have been nourishing the beach in the absence of the shoreline protective devices.

Some of the more common engineering and design approaches to protect shorefront structures

- *moving the structure*
- *beach nourishment*
- *seawalls and bulkheads*
- *revetments*
- *upper bluff stabilization*
- *surface and groundwater*
- *shotcrete and gunnite*

For long term planning, consider:

- Taking an inventory of available studies on local and regional coastal processes and beach resources and participating in studies to fill in information gaps about regional effects of shoreline protective structures on beach erosion and methods to counteract beach erosion,
- Establishing an overlay or geologic hazard assessment district and designate areas of coastal resource significance on the LUP and zoning

maps, to limit in-filling for relatively undeveloped areas and to limit seaward encroachment of development,

- Creating and maintaining a database/file of geotechnical reports from individual projects for use in analysis of regional effects of shoreline protective structures, including documentation of interference with sand transport, loss of sand from the beach, the amount of beach area already covered by shoreline protection devices, location of such encroachments, and the cumulative impacts of those devices on recreational use,
- Developing an in-lieu fee mitigation program to allow for mitigation of seawall impacts through payment of an in-lieu fee that is used to replenish beaches in the same littoral cell as the seawall,
- Monitoring and commenting on other jurisdiction's activities which may affect natural sand movement and supply on the local government's beaches,
- Developing a comprehensive shoreline protection program that includes regular shoreline surveys to develop short and long-term shoreline trends, identifying priorities for types of shoreline protection, and developing programs for opportunistic beach nourishment using cleaned dredge material, clean material from flood control structures, clean excavation material and other innovative sources,
- Identifying which beaches have priority for nourishment,
- Ranking the types of permissible shoreline protective devices in or of least to most potential coastal impact and set forth technical criteria and standards for the structural design of shoreline protective devices,
- Encouraging voluntary consolidation or purchase of property or development of a transfer-of-development credit program as a means to reduce development potential of coastal fronting land,
- Seeking federal and state funds available for studies about the impact of beach erosion on beach access, the source of harbor deposition material, the effect harbor deposition has on beach replenishment down coast of the harbor, the impact of harbor dredging on potential tsunami hazards, the direct and indirect costs of harbor dredging to the local government or Harbor District,
- Join or establish a regional shoreline authority that will enable mutual support and coordination on shoreline issues that are of concern beyond an individual jurisdiction.

➢ *What are some emerging LCP issues related to shoreline erosion and protection?*

As you update your LCP, keep in mind the long-term consequences of shoreline armoring during a time of rising sea level, including the immediate and long-term repercussions on beaches and recreation.

♦ Monitoring and Maintenance Issues

Most shoreline protection efforts (structures or nourishment) need occasional maintenance for the protection effort to continue to perform effectively. In many cases, maintenance occurs only when someone notices that there is a possible problem, following a major storm event which may have damaged the shoreline protection, or when there is extra sand or rock from another project and maintenance can be done conveniently. An alternative to random maintenance is to initiate a monitoring program which provides triggers or conditions which would lead to some form of maintenance.

Maintenance also brings up the issue of how to deal with repair of a seawall that has reached the end of its economic life. Your policies should address the potential impacts of the "repaired" wall, particularly if the impacts of a structure in that location have never been addressed. In addition, if a seawall is at the end of its economic life, this is an appropriate time to consider whether any type of shore protection is still necessary, and if some protection is necessary, is the existing structure the type and design that has the least potential for future and long-term impacts to coastal resources.

Procedurally, some seawall maintenance will require coastal permits (see Code of Regulations §13252). For more information, read more from Coastal Commission's staff engineer in *Procedural Guidance Document: Monitoring*, written in January 1997 and found at http://www.coastal.ca.gov/pgd/pgd-mon.html#Introduction.

♦ Minimizing and Mitigating Impacts of Armoring

When updating your LCP policies, require that all impacts of shoreline armoring be minimized to the extent possible. This has typically included minimizing the encroachment on the beach and designing the structure to be visually compatible with the environment.

When the opportunities to minimize impacts are exhausted, your policies should require mitigation for impacts that cannot be avoided. Such impacts include:

- Encroachment,
- Passive erosion through fixing of the back beach, and
- Compensating for sand lost.

The Report on In-Lieu Fee Beach Sand Mitigation Program: San Diego County, published in 1997 and available at

http://www.coastal.ca.gov/pgd/sand1.html, contains helpful information and ideas on how to mitigate impacts from seawalls.

Beyond the impacts listed above, the Coastal Commission has addressed the effects of seawalls by examining the economic impacts of shoreline armoring on recreation and habitat loss and requiring mitigation for these impacts. For examples, see

- Application 3-02-024, Ocean Harbor House Seawall, found at http://www.coastal.ca.gov/sc/Th13a-1-2005.pdf, and
- Application 6-05-72, Las Brisas Condominium HOA, found at http://www.coastal.ca.gov/sd/W8e-10-2005.pdf.

♦ Beach Nourishment

As discussed, loss of sediment/sand supply can have many damaging effects.

- Hazards are increased because of increased erosion and subsequent damage from waves,
- Coastal recreation opportunities are decreased, and
- Armoring becomes necessary in places not needed before.

Consider including language in your LCP to advance a regional management approach to sediment supply, one that accepts the value of beaches and works to improve them. An LCP can identify local involvement in regional opportunity (see box). Your LCP can also look at level of armoring in your community and identify ways to mitigate impacts to sand supply, public access, and recreation.

The California Coastal Sediment Management Workgroup facilitates regional approaches to protecting, enhancing and restoring California's coastal beaches and watersheds through federal, state and local cooperative efforts. Read about it at http://www.dbw.ca.gov/csmw/csmwhome.htm.

♦ Replacement of Primary Structures that Have Protective Devices

Another emerging topic of concern is creating policies to determine how to site a structure that is replacing an old structure that has been protected by a seawall. Your LCP policies could tie the seawall to the structure for which it was built. In reviewing such development applications, the Coastal Commission has considered the stability of the new structure without a seawall.

➢ *Where can I read some examples of LCP hazards policies?*

The following LCPs provide some good examples of shoreline erosion and protection policies, ordinances, and definitions.

- City of Imperial Beach http://municipalcodes.lexisnexis.com/codes/imperial/.

- City of Ventura General Plan
  http://www.cityofventura.net/depts/comm_dev/generalplan/August8_GeneralPlanDraft.asp.
- Marin County
  http://www.co.marin.ca.us/depts/CD/main/comdev/ADVANCE/coastal.cfm.
- The City of Malibu
  http://www.ci.malibu.ca.us/index.cfm?fuseaction=detailgroup&navid=204&cid=1576.